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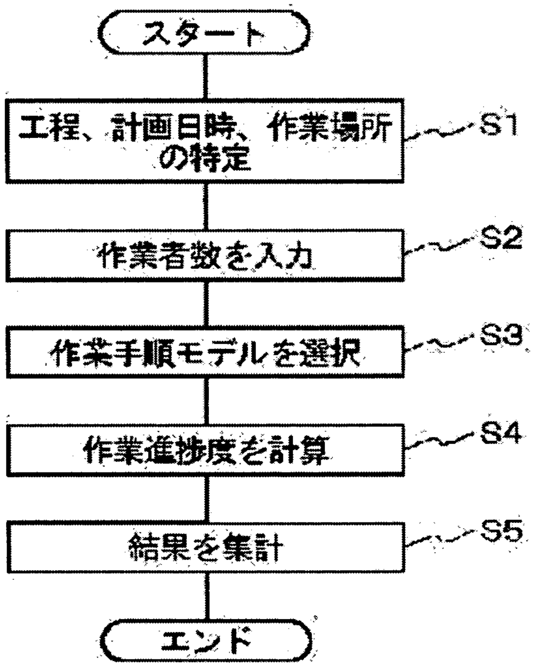
(54) TASK PROGRESS ESTIMATION DEVICE AND METHOD, TASK SCHEDULE REVIEW DEVICE AND METHOD, AND PROCESS PROGRESS EXPECTATION DEVICE AND METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a task progress estimation device capable of exactly estimating the progress for each process.
SOLUTION: The task progress estimation device is provided with an input part for inputting the number of workers to be assigned to an object to be subjected to a task progress estimation, a storage part for storing data showing the relation of the number of workers and the task progress corresponding to either task contents or task environment at least, and an arithmetic part for operating the task progress concerning the object on the basis of the inputted number of workers and the data stored in the storage part.



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[Claim(s)]

[Claim 1] The work progress anticipation equipment had the storing section which stores in the data in which the relation of the input section which inputs the number of operators assigned to the object which performs work progress anticipation, and the a work content, and the number of the aforementioned operators corresponding to either at least and the degree of work progress of a work environment is shown, and the operation part calculate the degree of work progress about the aforementioned object based on the data stored in number and the aforementioned storing section of the operator by whom an input was done [aforementioned

[Claim 2] The work progress anticipation method characterized by providing the following. (a) Specify the object which performs work progress anticipation. (b) Determine the number of operators assigned to the aforementioned object. (c) Create the function which shows the relation between a work content, and the number of the aforementioned operators corresponding to either at least and the degree of work progress of a work environment. (d) Calculate the degree of work progress about the aforementioned object based on an operator's number and aforementioned function by which a decision was made [aforementioned].

[Claim 3] It sets to the work progress anticipation method according to claim 2, and it is (e) further. Based on the result of the aforementioned calculation, the number of operators assigned to the object by which a decision was made [aforementioned] is re-evaluated (f), The work progress anticipation method which it had [calculating the degree of work progress about the aforementioned object and] based on an operator's number and aforementioned function by which re-evaluation was carried out [aforementioned].

[Claim 4] It sets to the work progress anticipation method according to claim 2, and is (g) further. The work progress anticipation method equipped with asking for the excess capacity about the aforementioned object based on the degree of work progress by which calculation was carried out [aforementioned].

[Claim 5] It sets to the work progress anticipation method according to claim 4, and is (h) further. The work progress anticipation method equipped with changing the excess capacity called for the account of before to other objects other than for the above.

[Claim 6] Work-plan examination equipment characterized by providing the following. The work plan which shows rating and a work period. Set-up basic capacity. The input section which inputs the set-up permissible capacity. The work-plan examination section determine the aforementioned work plan as it is an execute permission when it judges whether the portion which exceeded the account of before is over the aforementioned permissible capacity when it judges whether the aforementioned work plan is over the aforementioned basic capacity and the aforementioned work plan is over the aforementioned basic capacity as a result of the aforementioned judgment and judges that the portion which exceeded the account of before has not exceeded the aforementioned permissible capacity as a result of the aforementioned judgment.
[Claim 7] It is work-plan examination equipment which exceeded the aforementioned basic capacity in the aforementioned work period when the aforementioned permissible capacity continued in work-plan examination equipment according to claim 6 and which is set up as the aforementioned rating.
[Claim 8] When the aforementioned rating contained in the aforementioned work plan is inputted into the aforementioned input section in work-plan examination equipment according to claim 6 or 7 so that two or more minimum work units may be included, and the aforementioned work-plan examination section makes the aforementioned judgment, it is work-plan examination equipment in consideration of the aforementioned minimum work unit contained in the portion which exceeded the account of before.
[Claim 9] The work-plan examination method characterized by providing the following. (aa) Offer the work plan which shows rating and a work period. (ab) Set up basic capacity and permissible capacity. (ac) Judge whether the aforementioned work plan is over the aforementioned basic capacity. (ad) It judges whether when the aforementioned work plan is over the aforementioned basic capacity as a result of the aforementioned judgment, the portion which exceeded the account of before is over the aforementioned permissible capacity (ae) When it is judged that the portion which exceeded the account of before is not over the aforementioned permissible capacity as a result of the aforementioned judgment, carry out the aforementioned work plan.
[Claim 10] It is the work-plan examination method which exceeded the aforementioned basic capacity in the aforementioned work period when the aforementioned permissible capacity continued in the work-plan examination method according to claim 9 and which is set up as the aforementioned rating.
[Claim 11] In the work-plan examination method according to claim 9 or 10, the aforementioned rating contained in the aforementioned work plan is divided into two

or more minimum work units, and the aforementioned judgment is the work-plan examination method performed in consideration of the aforementioned minimum work unit contained in the portion which exceeded the account of before.
[Claim 12] Process progress anticipation equipment equipped with the operation part which performs a simulation based on the aforementioned process model into which the data to which the progress situations of the aforementioned practice are indicated to be two or more process models corresponding to two or more processes and the actual result data input section which inputs into the aforementioned process model the data in which each actual progress situation of two or more aforementioned processes is shown were inputted, and performs progress anticipation of two or more aforementioned processes.
[Claim 13] (ba) Offering two or more process models corresponding to two or more processes, and (bb) Inputting into the aforementioned process model the data in which each actual progress situation of two or more aforementioned processes is shown, and (bc) the above -- the process progress anticipation method equipped with performing a simulation based on the aforementioned process model into which the data in which an actual progress situation is shown were inputted, and performing progress anticipation of two or more aforementioned processes

[Detailed Description of the Invention]

[0001]
[The technical field to which invention belongs] this invention relates to process progress anticipation equipment and a method at work progress anticipation equipment and a method, work-plan examination equipment and a method, and a row.
[0002]
[Description of the Prior Art] By work with very many work man days and work sites, performing as correctly as possible examination of the workability of a work plan and progress anticipation of work is called for like shipbuilding work. For example, in a large-sized luxury liner, each of the work to which has a certain 1000 more than thing, and the number of cabins constructs carrying-in taking out of each part material, the work which constructs a ceiling, the work which constructs a wall, and a floor on the occasion of construction of those cabins is started by how many workers when, and the whole working days fluctuate sharply according to the result of when it ends and a work plan.

[0003]

[Problem(s) to be Solved by the Invention] To perform progress anticipation for every process correctly is desired. It is desired for the number of operators (the amount of work performance) assigned to each process to be the optimal. An operator is wanted to be assigned on the optimal schedule to each process. Excess capacity is wanted to be changed the the best for other processes.

[0004] To grasp the workability of a work plan to accuracy more is desired. In case a work plan is re-evaluated, for there to be no need of reexamining the original plan sharply, and to end with the minimum change is desired.

[0005] When the situation after a work start has shifted to the situation currently expected before the work start, to consider the situation after the work start and to grasp a work progress situation is desired. When the situation after a work start has shifted to the situation currently expected before the work start, to consider the situation after the work start in the fewer amount of operations, and to grasp a work progress situation is desired.

[0006] The purpose of this invention is offering the work progress anticipation equipment and the method of performing progress anticipation for every process correctly. Other purposes of this invention are offering the work progress anticipation equipment and the method of optimizing the number of operators (the amount of work performance) assigned to each process. The purpose of further others of this invention is that an operator offers the work progress anticipation equipment and the method which can be assigned on the optimal schedule to each process. The purpose of further others of this invention is offering the work progress anticipation equipment and the method excess capacity's being changed the the best for other processes.

[0007] The purpose of further others of this invention is offering the work-plan examination equipment and the method of grasping the workability of a work plan to accuracy more. In case the purpose of further others of this invention re-evaluates a work plan, it is offering the work-plan examination equipment and the method which there is no need of reexamining the original plan sharply, and can be managed with the minimum change.

[0008] The purpose of further others of this invention is offering the process progress anticipation equipment and the method of being able to consider the situation after the work start and grasping a work progress situation, when the situation after a work start has shifted to the situation currently expected before the work start. The purpose of further others of this invention is offering the process progress anticipation equipment and the method of being able to consider the situation after the work start in the fewer amount of operations, and grasping a work progress situation, when the situation after a work start has shifted to the situation currently expected before the work start.

[0009]

[Means for Solving the Problem] The The means for solving a technical problem is expressed as follows. The account of ** of parenthesis (), a number, the sign, etc. is carried out to the technical matter of the claim correspondence under the expression. Although the number, the sign, etc. clarify coincidence / correspondence relation between the technical matter dealing with a claim, and the technical matter of at least one gestalt in the plurality and gestalt of operation, they are not for it being shown that the technical matter dealing with a claim is limited to the technical matter of the gestalt of operation.

[0010] The work progress anticipation equipment of this invention has the storing section store the data the relation of the input section which inputs the number of operators assigned to the object which performs work progress anticipation, and the a work content, and the number of the aforementioned operators corresponding to either at least and the degree of work progress of a work environment is shown, and the operation part calculate the degree of work progress about the aforementioned object based on the data stored in number and the aforementioned storing section of the operator by whom an input was done [aforementioned]

[0011] The work progress anticipation method of this invention (a) The object which performs work progress anticipation is specified (S1), (b) The number of operators assigned to the aforementioned object is determined (S2), (c) The function which shows the relation between a work content, and the number of the aforementioned operators corresponding to either at least and the degree of work progress of a work environment is created (S3), (d) Based on an operator's number and aforementioned function by which a decision was made [aforementioned], it has thing (S4) which calculates the degree of work progress about the aforementioned object.

[0012] It sets to the work progress anticipation method of this invention, and is (e) further. Based on the result of the aforementioned calculation, the number of operators assigned to the object by which a decision was made [aforementioned] is re-evaluated (f) Based on an operator's number and aforementioned function by which re-evaluation was carried out [aforementioned], it has calculating the degree of work progress about the aforementioned object.

[0013] It sets to the work progress anticipation method of this invention, and is (g) further. Based on the degree of work progress by which calculation was carried out

[aforementioned], it has asking for the excess capacity about the aforementioned object.

[0014] It sets to the work progress anticipation method of this invention, and is (h) further. It has changing the excess capacity called for the account of before to other objects other than for the above.

[0015] The work plan the work-plan examination equipment of this invention indicates rating and a work period to be, The input section which inputs the set-up basic capacity and the set-up permissible capacity, It judges whether the aforementioned work plan is over the aforementioned basic capacity. The result of the aforementioned judgment, It judges whether when the aforementioned work plan is over the aforementioned basic capacity, the portion which exceeded the account of before is over the aforementioned permissible capacity. When it is judged that the portion which exceeded the account of before is not over the aforementioned permissible capacity as a result of the aforementioned judgment, it has the work-plan examination section which determines that the aforementioned work plan is an execute permission.

[0016] In the work-plan examination equipment of this invention, the aforementioned permissible capacity is set up as the aforementioned rating which exceeded the aforementioned basic capacity in the continuous aforementioned work period.

[0017] In the work-plan examination equipment of this invention, the aforementioned rating contained in the aforementioned work plan is inputted into the aforementioned input section so that two or more minimum work units may be included, and the aforementioned work-plan examination section takes into consideration the aforementioned minimum work unit contained in the portion which exceeded the account of before, when making the aforementioned judgment.

[0018] The work-plan examination method of this invention (aa) The work plan which shows rating and a work period is offered (S11), (ab) Basic capacity and permissible capacity are set up (S12), (ac) It judges whether the aforementioned work plan is over the aforementioned basic capacity (S13), (ad) When the aforementioned work plan is over the aforementioned basic capacity as a result of the aforementioned judgment, the account of before It judges whether the portion which exceeded is over the aforementioned permissible capacity (S15), (ae) When it is judged that the portion which exceeded the account of before is not over the aforementioned permissible capacity as a result of the aforementioned judgment, it has carrying out the aforementioned work plan (S16).

[0019] In the work-plan examination method of this invention, the aforementioned permissible capacity is set up as the aforementioned rating which exceeded the aforementioned basic capacity in the continuous aforementioned work period.

[0020] In the work-plan examination method of this invention, the aforementioned rating contained in the aforementioned work plan is divided into two or more minimum work units, and the aforementioned judgment is made in consideration of the aforementioned minimum work unit contained in the portion which exceeded the account of before.

[0021] The process progress anticipation equipment of this invention is equipped with the operation part which performs a simulation based on the aforementioned process model into which the data to which the progress situations of the aforementioned practice are indicated to be two or more process models corresponding to two or more processes and the actual result data input section which inputs into the aforementioned process model the data in which each actual progress situation of two or more aforementioned processes is shown were inputted, and performs progress anticipation of two or more aforementioned processes.

[0022] the process progress anticipation method of this invention -- (ba) Offering two or more process models corresponding to two or more processes, and (bb) Inputting into the aforementioned process model the data in which each actual progress situation of two or more aforementioned processes is shown, and (bc) the above -- it has performing a simulation based on the aforementioned process model into which the data in which an actual progress situation is shown were inputted, and performing progress anticipation of two or more aforementioned processes

[0023]

[Embodiments of the Invention] 1 operation gestalt of this invention is explained.

[0024] The 1st operation gestalt is explained with reference to drawing 1 . This operation gestalt is work progress anticipation equipment for performing progress anticipation for every process to accuracy more. Drawing 1 is a flow chart which shows the flow of operation of work progress anticipation equipment.

[0025] As shown in drawing 1 , it has Step S1 which specifies the object which performs work progress anticipation, Step S2 which specifies the number of operators, Step S3 which chooses a work-habits model, step S4 which calculates the degree of work progress, and Step S5 which totals and outputs the calculation result.

[0026] Drawing 2 is the table showing the state where Steps S1 and S2 were performed. Z shows the process and work site which were pinpointed at Step S1 from the work site A shown in the line of the table of drawing 2 . In this case, the work site and the process correspond to the one to one. The "day" shown in the train of the table of drawing 2 shows the plan time specified at Step S1.

[0027] As shown in drawing 2 , about the work site A, every one operator is continuously assigned from the first day to the third (Step S2). About the work site B, every two operators are continuously assigned from the second to the fourth. About the work site C, every one operator is assigned to the fourth day and the Muika eye with the second day. About the work site D, five operators are assigned with the third day on each fifth.

[0028] Drawing 3 shows the work-habits model used at Step S3. It is the meaning that 10x1=10(%) work will advance about a day if "10n in case the number is 1" works by one person in drawing 3 . [every] "20n in case the numbers are 2 and 3" means that 20x2=40(%) work will advance about a day if it works by two persons, and 20x3=60(%) work will advance about a day if it works by three persons. [every] [every] Similarly, "30n in case the numbers are 4 and 5" means that 30x4=120(%) work will advance about a day if it works by four persons, and 30x5=150(%) work will advance about a day if it works by five persons. [every] [every]

[0029] As shown in drawing 3 , a workload (the degree of progress) is not necessarily proportional to the number. If it is a lot of people, in proportion to the number, working efficiency will not necessarily go up from the reasons of free movement being barred by the case where the space of a work site is narrow. The point which created the "function" shown in drawing 3 as shows the relation between the number according to the work content, the work situation, or the work environment and the degree of progress is one of the points of this operation gestalt.

[0030] After Steps S1 and S2 were performed as shown in drawing 2 when there was no work-habits model shown in drawing 3 conventionally, it was able to ask only for the degree of work progress in the form proportional to the number. That is, since an idea colander was not obtained as the workload is proportional to the number when the number was assigned like drawing 2 , the degree of work progress was outputted as a table shown in drawing 4 . If one person works at a time from the first day to the third about a work site A as shown in drawing 4 If work of every [per day] ten amount is performed, consequently it accumulates as a degree of work progress day by day, it becomes 10 and 20 or 30% and two persons work at a time from the second to the fourth about a work site B Work of the amount of every 20 (what made the one workload double precision simply) is performed per day, consequently it accumulates as a degree of work progress day by day, and has become 20 and 40 or 60%. It is the same also about work sites C and D.

[0031] On the other hand, with this operation gestalt, the table shown in drawing 5 and drawing 6 is obtained as a result by which the degree of work progress is calculated based on the work-habits model shown in drawing 3 (step S4).

[0032] That is, if it calculates based on the work-habits model of drawing 3 about a work site A from one person being assigned at a time (referring to drawing 2), it advances 1= 10x10 (%) every, consequently the degree of progress about the work site A of drawing 5 has become 10 and 20 or 30%. Since two persons are assigned at a time about a work site B, if it calculates based on the work-habits model of drawing 3 , it advances 2= 20x40 (%) every, consequently the degree of progress about the work site B of drawing 5 has become 40 or 80,100%. About the fourth (a work period is three days) day of a work site B, although it becomes 40x3=120(%), since the degree of work progress cannot exceed 100 (%), it is set to 100 (%). As the surplus 20 (%) is shown in drawing 6 , excess capacity is expressed as 20 (%). Similarly, since five persons are assigned at a time about a work site D, it advances 5= 30x150 (%) every, and has become 100 (%) in drawing 5 on the work opening day. About the work site D, by drawing 6 , 50 (%) carries out a surplus to a work opening day, and it is shown that the excess capacity of 150 (%) is born to the second of work.

[0033] According to this operation gestalt, since the degree of work progress is calculated based on a work-habits model, the more exact degree of work progress can be expected compared with the former. Based on more exact work progress anticipation, it becomes possible to re-evaluate allocation (how many persons to be assigned in how many days (what day)?) of the number of operators of Step S2. Furthermore, if the excess capacity shown in drawing 6 is known, allocation of the number of operators of Step S2 will be re-evaluated, or it will become possible to consider changing excess capacity to other work sites.

[0034] Next, with reference to drawing 11 , the 2nd operation gestalt is explained from drawing 7 .

[0035] The 2nd operation gestalt is in the form based [whether the drawn-up work plan is an execute permission and] on the actual condition, and what is grasped more to accuracy is planned and proposed.

[0036] Step S11 into which the 2nd operation gestalt inputs a process as shown in drawing 7 , Step S12 which inputs basic capacity and permissible capacity, and Step S13 which judges whether basic capacity was exceeded, It has Step S14 which calculates the exceeded rating, Step S15 the exaggerated rating judges whether it is the inside of permission capacity to be, Step S16 which does work as planned, Step S17 which delays a plan, and Step S18 which outputs a result.

[0037] Drawing 8 is a Gantt chart which shows the work plan drawn up with this operation gestalt. The content shown in drawing 8 is inputted at Step S11. As shown in drawing 8 , Work (work content) A is 1000kg rating (for example, the amount of conveyances etc.) on the whole, and it is due to carry out 200kg [per day] rating from the first day to the 5th, and to end the work in a work plan. Similarly, Work B is 600kg rating on the whole, and it is due to carry out 120kg [per day] rating from the 4th to the 8th, and to end the work by the work plan. Similarly, Work C is 250kg rating on the whole, and it is due to carry out 50kg [per day] rating from the 6th to the 11th, and to end the work by the work plan.

[0038] Subsequently, at Step S12, basic capacity is set up with 300kg per day (input), and permissible capacity is set up with 100kg and a day. At Step S13, if the rating to be performed on the 1st exceeds 300kg as the above-mentioned basic capacity, it will be judged that it is over the basic capacity. At Step S15, if it is for three days which will be judged to be the inside of permission capacity and continue if it is for two days which will be judged to be the inside of permission capacity and continue if it is only one day and will not exceed 100kg as the above-mentioned permissible capacity and the sum total for the two days will not exceed 100kg and the sum total for the three days will not exceed 100kg, it be judged as the inside of permission capacity.

[0039] Drawing 9 shows the rating which should be performed day by day, when carrying out the work plan shown in drawing 8 as planned. Till the 3rd day, every 200kg [per day] rating is performed as work A from the first day. Since Work B is done in addition to Work A, every 320kg [per day] rating will be performed on the 4th day and the 5th. 120kg rating will be performed as work B on the 6th. Since Work C is done in addition to Work B, every 170kg [per day] rating will be performed on the 7th day and the 8th. 50kg rating will be performed from the 9th as work C till the 11th day.

[0040] In Step S13, since each rating on the 5th is over 300kg with the 4th day, it is judged that it is over basic capacity (Step S13- Y). Consequently, it progresses to Step S14 and the exceeded rating is calculated. In two days of the 5th day which will continue, 20x2=40(kg) will be made into exaggerated rating with the 4th day. In Step S15, it is judged that 40 (kg) is not over 100 (kg) (Step S15- Y), it progresses to Step S16, and it is determined that it is possible to do work as the work plan of drawing 8 .

[0041] Basic capacity and permissible capacity can be determined for example, based on labor agreement (what it can work what [a maximum of] hour for one day including overtime work in a unit, and it is specified as per one week that it can work what [a maximum of] hour).

[0042] With this operation gestalt, there is a margin in the rating which can be performed and it notes being unable to perform exact judgment per workability of a plan in single uniform criteria (basic capacity). Furthermore, as for the permissible capacity as the margin, the unit is defined as "kg and a day" as rating. Permissible capacity is good if continuation exaggerated rating (stating) does not exceed preset value (this example 100kg), the day which exceeds basic capacity is way piece ****** rather than is continuous, and the continuation exaggerated rating is reset.

[0043] Conventionally, it was judged only on single uniform criteria (basic capacity : 300kg per day). Consequently, by the work plan of drawing 8 , as shown in drawing 10 and drawing 11 , in order that the 4th day and the 5th day may exceed basic capacity, as for Work B, work will be started from the 6th. Consequently, it has been the 10th day at the work end time of Work B. For the reasons of having relevance in Work B and its work content, as it is in the original plan of drawing 8 , unless Work C is from the 4th, supposing it cannot start it, from the work opening day of Work B As a result of the work opening day of Work B shifting on the 6th, the work opening day of Work C turns into the 9th day, and the work end day of Work C turns into the 13th day (it will end in the original plan of drawing 8 and drawing 9 on the 11th).

[0044] As mentioned above, although the plan was immediately delayed when exceeding basic capacity conventionally, if it is in permissible capacity according to this operation gestalt, it will perform as planned. Since it is sufficient if a plan is re-made in the range which does not exceed the permissible capacity even if it is over permissible capacity, it is suppressed to the minimum that the original work plan is reexamined sharply.

[0045] In addition, in the example of drawing 8 , the minimum work unit is 200kg, Work B was 120kg, it assumed that Work A was 50kg, and it explained Work C. Below, the minimum work unit is explained. Here, the minimum work unit of Work B is 40kg, and suppose that three things per day performed the minimum work unit (120kg) every are planned.

[0046] The case where it is judged that continuation [on the 5th] exaggerated rating is over 160kg (permissible capacity) of permission capacity with the 4th day temporarily (continuation exaggerated rating is 260kg) is considered as a result of Step S15. Although 120kg of work B is due to be done by each on the 4th and the 5th at a time the minimum work unit of the work B of them -- every [one (40kg)] -- the 4th day and the 5th day, if it carries out by coming out, respectively and the part (a total of 160kg) on the 2nd of the two remaining minimum work units (80kg) is turned per day on and after the 6th Continuation [on the 4th and the 5th] exaggerated rating stops exceeding permissible capacity. As mentioned above, reexamining the original work plan sharply in adjusting the minimum work unit every and re-making a plan so that permissible capacity may not be exceeded is suppressed to the minimum.

[0047] Next, with reference to drawing 15 , the 3rd operation gestalt is explained from drawing 12 .

[0048] By the simulator generally used in order to predict a work progress situation, after actual work is done, time takes for passing and an error arises between the data currently assumed within the simulator before the work start, and the data in which an actual work progress situation is shown. The 3rd operation gestalt plans to input into a simulator the data in which the actual work progress situation was made to reflect, after work is started, and to expect a subsequent work progress situation to accuracy more.

[0049] Drawing 12 is a gun chart which shows the work plan of process A-C.

[0050] As shown in drawing 13 (a), a simulation is performed based on three process models 101, 102, and 103 of process A-C. The 1st process model 101 corresponds to Process A, and is a model of the warehouse which is a material carrying-in place. The 2nd process model 102 is a model of the fork lift truck for conveying the product which corresponds to Process B and consists of the material. The 3rd process model 103 is a model of the lift which conveys the product which corresponded to Process C and was conveyed by the fork lift truck.

[0051] If a simulation is started based on the setting (anticipation) data inputted into the simulator, the 1st to 3rd process model 101-103 will be in each state of (d) from drawing 13 (b) one by one with time. The sign M in the 1st to 3rd process model 101-103 shows the product under work.

[0052] Here, in the work plan shown by drawing 12 , the time of wanting to know the work progress situation on and after the 5th shown in a sign S2 is explained. For that purpose, it is necessary to reproduce the simulation situation on the 5th by the simulator. In this case, based on the setting data inputted into the simulator, a simulation is started from an initial time (sign S1 reference of drawing 12), and the data at the time of corresponding on the 5th are extracted conventionally. Thereby, the simulation situation on the 5th is reproduced by the simulator. That is, unless it was after passing through each operation process of drawing 13 (b) - (c) conventionally supposing drawing 13 (d) corresponded to the situation on the 5th, the result of drawing 13 (d) was not obtained.

[0053] Furthermore, when it calculates by the simulator based on setting data like before, as the simulation situation which corresponds on the 5th is shown in S2 of drawing 12 , Process A is ended, Process B is ended 80% and Process C presupposes that it has ended 10%. On the other hand, in the actual work progress situation on the 5th, as shown in drawing 14 , Process A may be ended, Process B may be ended 70%, and an error may produce Process C between the data (setting data) which may have been completed 20% and were assumed within the simulator before the work start, and the data in which an actual work progress situation is shown.

[0054] On the other hand, in this operation gestalt, the simulation data in which the actual progress situation was reflected in inputting the actual work progress situation on the 5th into each process model 101-103 can be expressed on a simulator.

[0055] With this operation gestalt, as shown in drawing 15 , the actual work progress situation on the 5th is reproduced as follows by each of each process models 101-103.

[0056] Process A is the rating of 10 hours, Process B is the rating of 60 hours and Process C presupposes that it is the rating of 30 hours. It is set as the 1st to 3rd process model 101-103 by making each rating into process conditions. That is, in the 1st process model 101, after Product M is inputted, it is outputted after 10-hour progress. In the 2nd process model 102, after Product M is inputted, it is outputted after 60-hour progress. In the 3rd process model 103, after Product M is inputted, it is outputted after 30-hour progress.

[0057] The situation that Product M was first inputted into each input section of the 1st to 3rd process model 101-103 on the simulator is generated. Since operation part 300 has ended the work of Process A, if 10-10x1=0 (time) is passed, it will set up the product M inputted into the input section of the 1st process model 101 so that it may be outputted from the 1st process model 101. Similarly, since operation part 300 has ended the work of Process B 70%, if 60-60x0.7=18 (time) is passed, it will set up the product M inputted into the input section of the 2nd process model 102 so that it may be outputted from the 2nd process model 102. Similarly, since operation part 300 has ended the work of Process C 20%, if 30-30x0.2=24 (time) is passed, it will set up the product M inputted into the input section of the 3rd process model 103 so that it may be outputted from the 3rd process model 103.

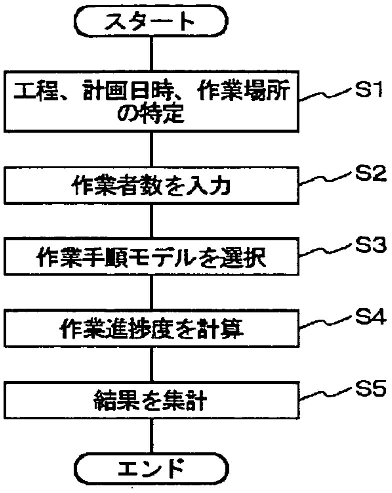
[0058] By setting up as mentioned above by the simulator, the actual situation on the 5th is correctly reproducible. If simulation calculation is started from the situation, at i.e., the time of S2, reproduced correctly to predict the situation on and after the 5th, highly precise prediction can be performed.

[0059] It is also possible to realize all the functions of the 3rd operation gestalt by one set of simulation equipment from the above 1st in this invention.

[0060]

[Effect of the Invention] According to this invention, progress anticipation for every process can be performed correctly.

[Drawing 1]



[Drawing 2]

作業者数

日 場所	1	2	3	4	5	6	7
A	1	1	1				
B		2	2	2			
C		1		1		1	
D			5		5		
⋮							
Z							

[Drawing 3]

作業手順モデル

人数	進捗度（%）
1	10n
2,3	20n
4,5	30n

[Drawing 4]

[Drawing 4]

作業進捗度（%）

日 場所	1	2	3	4	5	6	7
A	10	20	30				
B		20	40	60			
C		10		20		30	
D			50		100		

[Drawing 5]

作業進捗度（%）

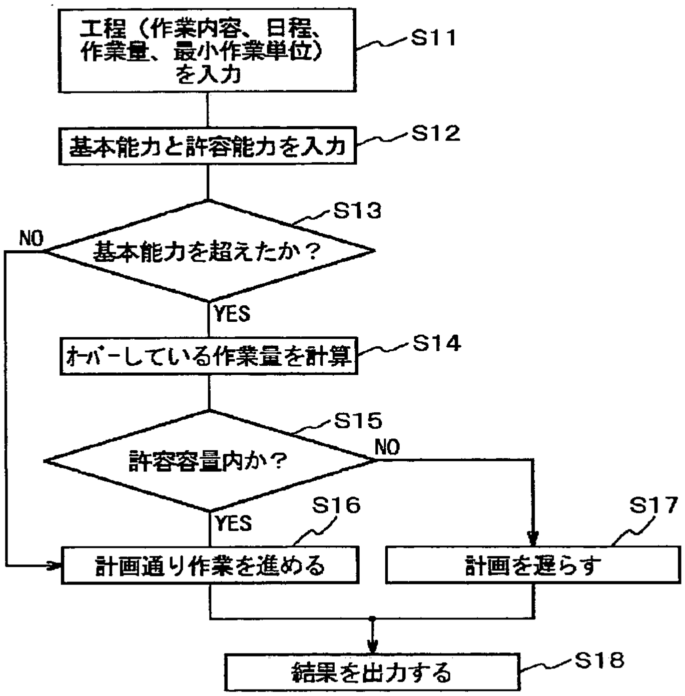
日 場所	1	2	3	4	5	6	7
A	10	20	30				
B		40	80	100			
C		10		20		30	
D			100				

[Drawing 6]

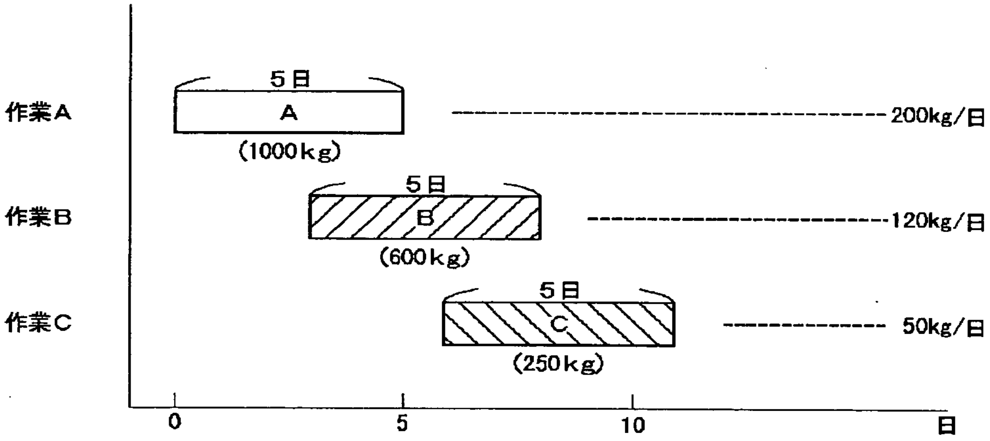
余剰能力（%）

日 場所	1	2	3	4	5	6	7
A							
B				20			
C							
D			50		150		

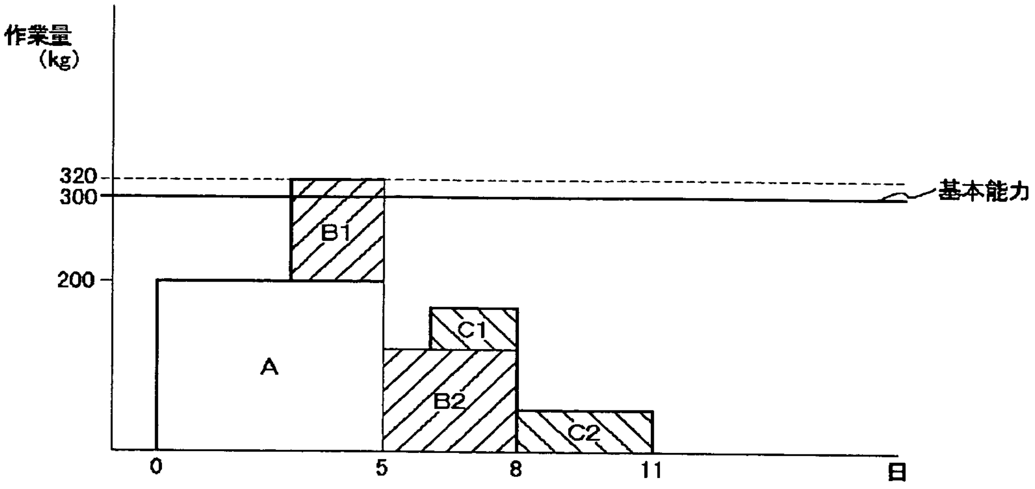
[Drawing 7]



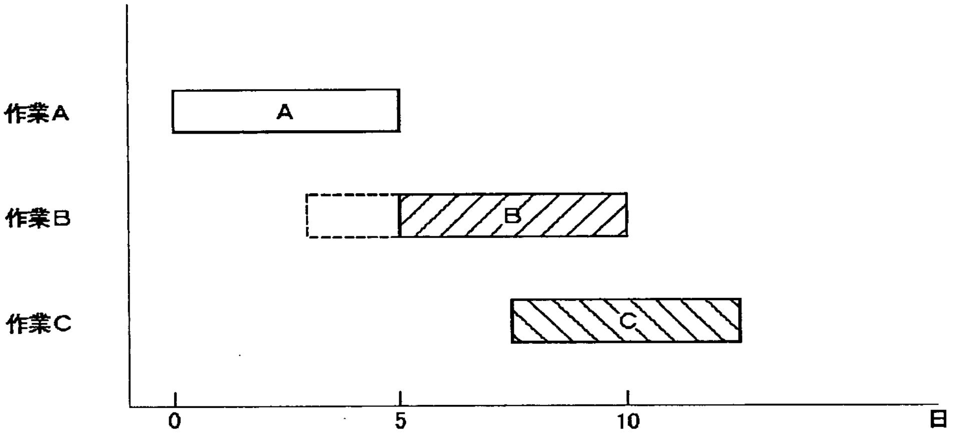
[Drawing 8]



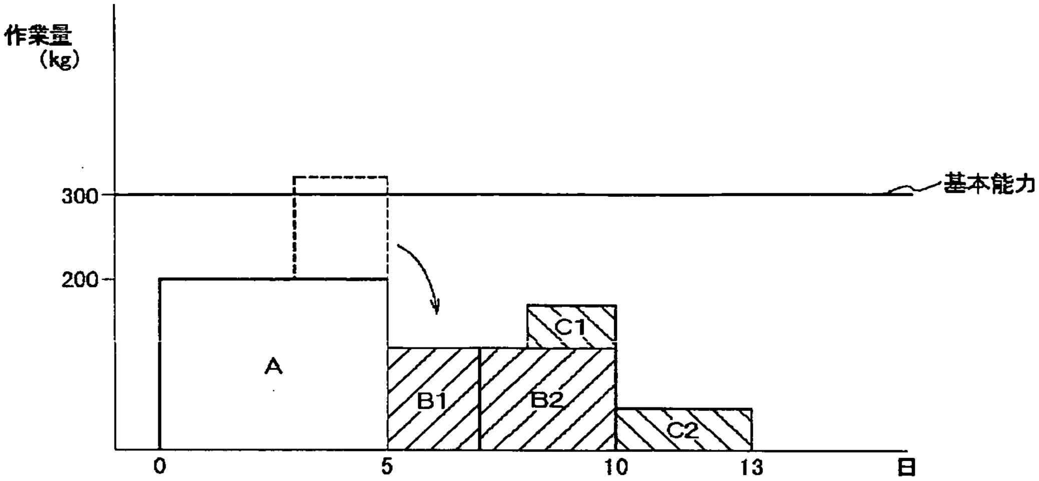
[Drawing 9]



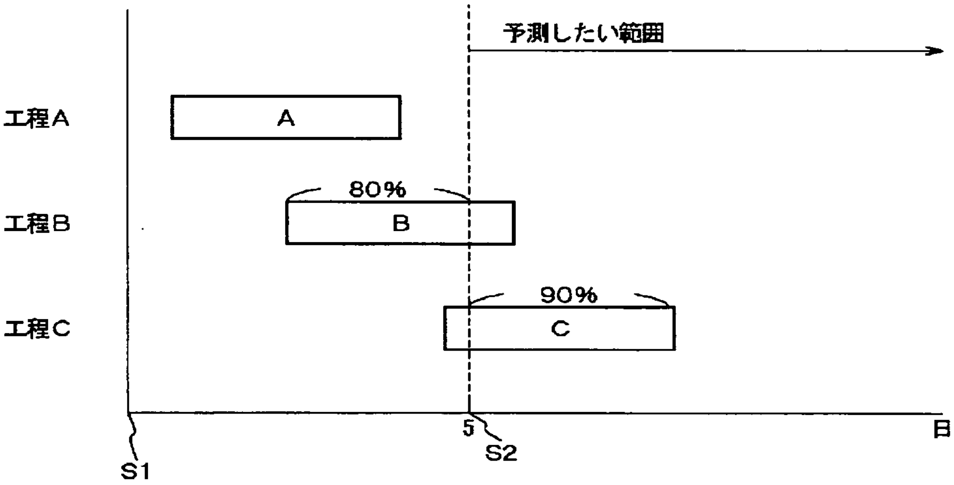
[Drawing 10]



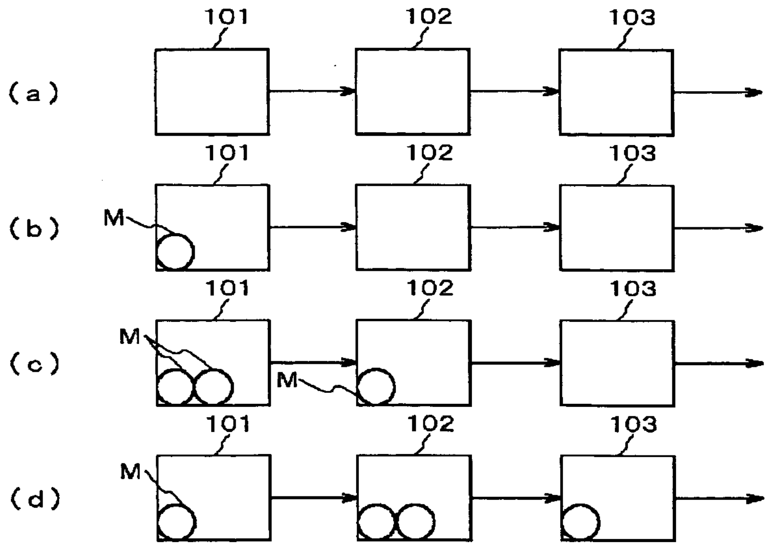
[Drawing 11]



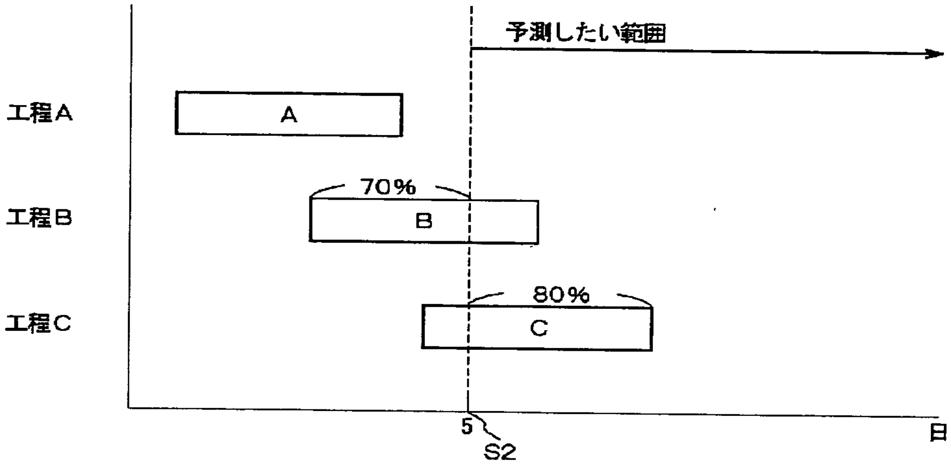
[Drawing 12]



[Drawing 13]



[Drawing 14]



[Drawing 15]